Multi-scale tool for the Assessment of Watershed Integrity (MAWI) in the Onondaga Lake Watershed

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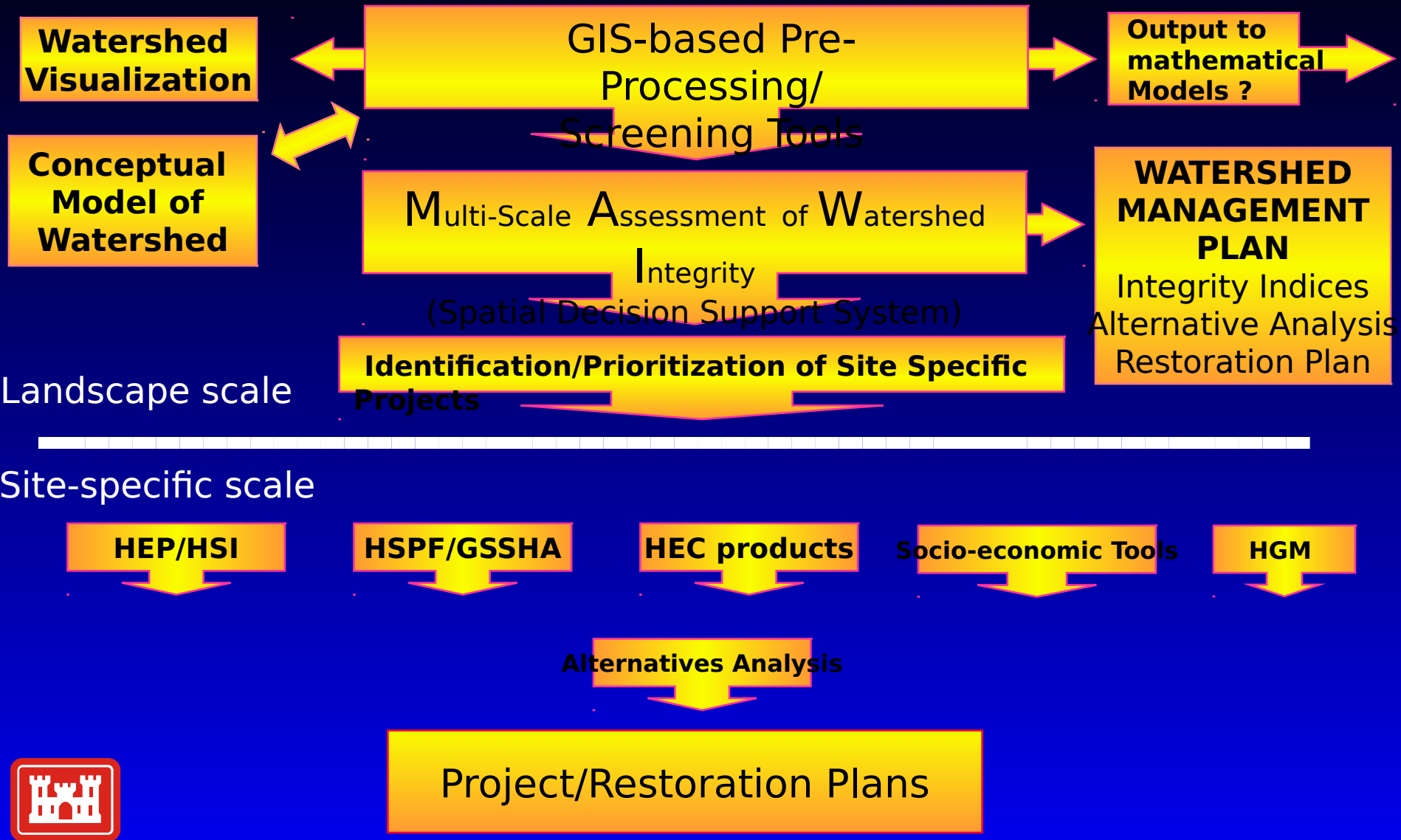
Watershed Guidance

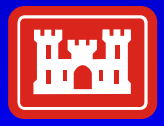
- Civil Works Strategic Plan
- ER 1105-2-100 (Planning Guidance Notebook)
- Planning Guidance Letter #61
- EC 11-2-187 (FY07 Budget EC)
- EC 1105-2-409 (Planning In A Collaborative Environment)
- Sec 729 of WRDA 86 as amended by Sec 202 of WRDA 2000

Watershed Assessment



Observed Problems

- Initiation of system-wide or watershed studies without acquisition of pertinent spatial data
- Initiation of watershed studies at inappropriate scales
  - "Collections" of site-specific projects
- Expensive spatial data is acquired, but then they don't know what to do with it
- System-wide assessments are attempted, but they aren't multidisciplinary
- System-wide assessments fail to yield quantitative or semi-quantitative results that can be used for comparing alternatives



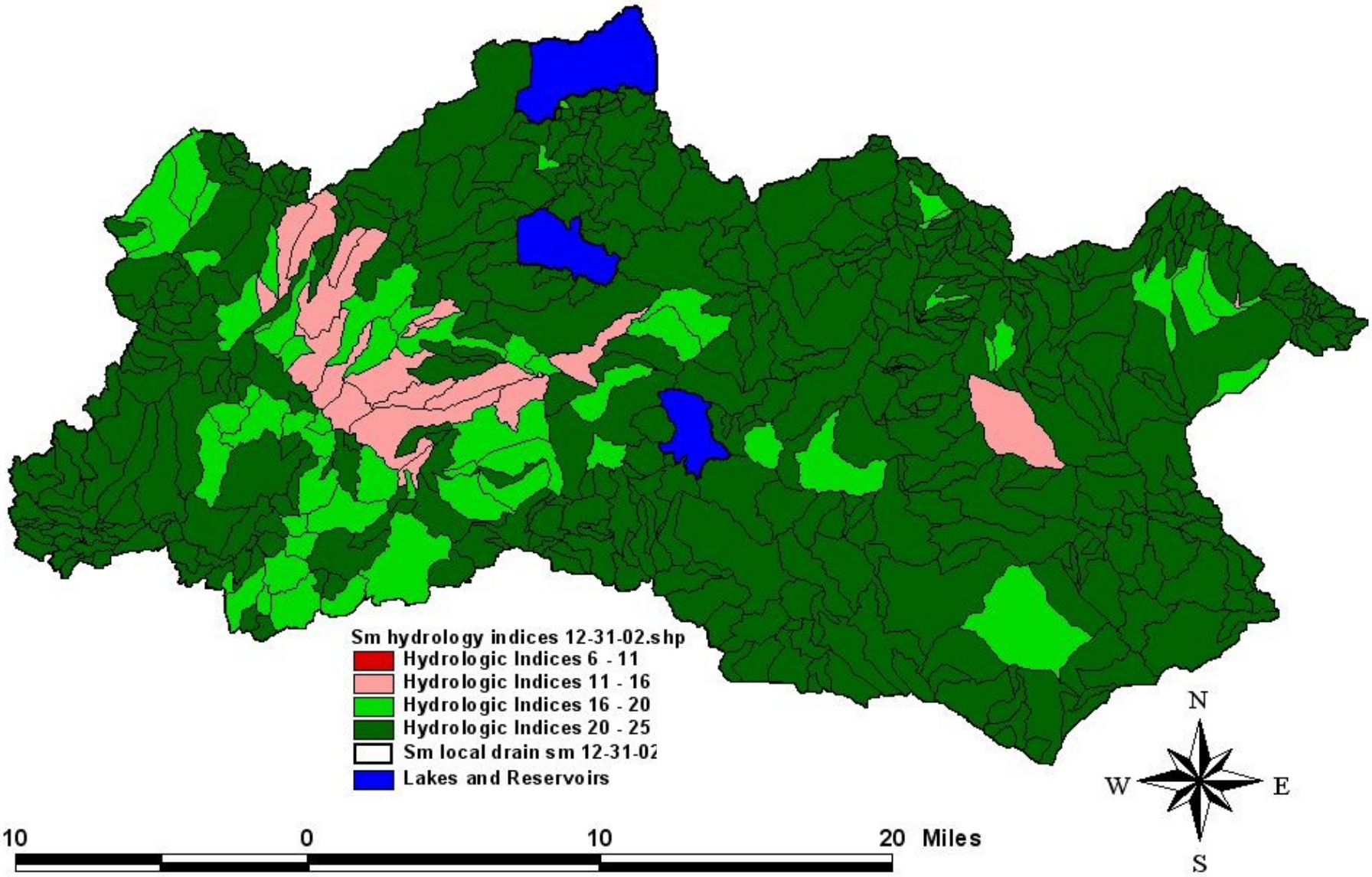
MAWI

- Multi-scale Assessment of Watershed Integrity (MAWI)
  - Spatial Decision Support System
  - Uses multiple scales, assesses multiple disciplines
  - Involves field sampling
  - Serves as a baseline assessment and focusing tool
  - Has previously been applied throughout southern California, being developed for central California and western New York

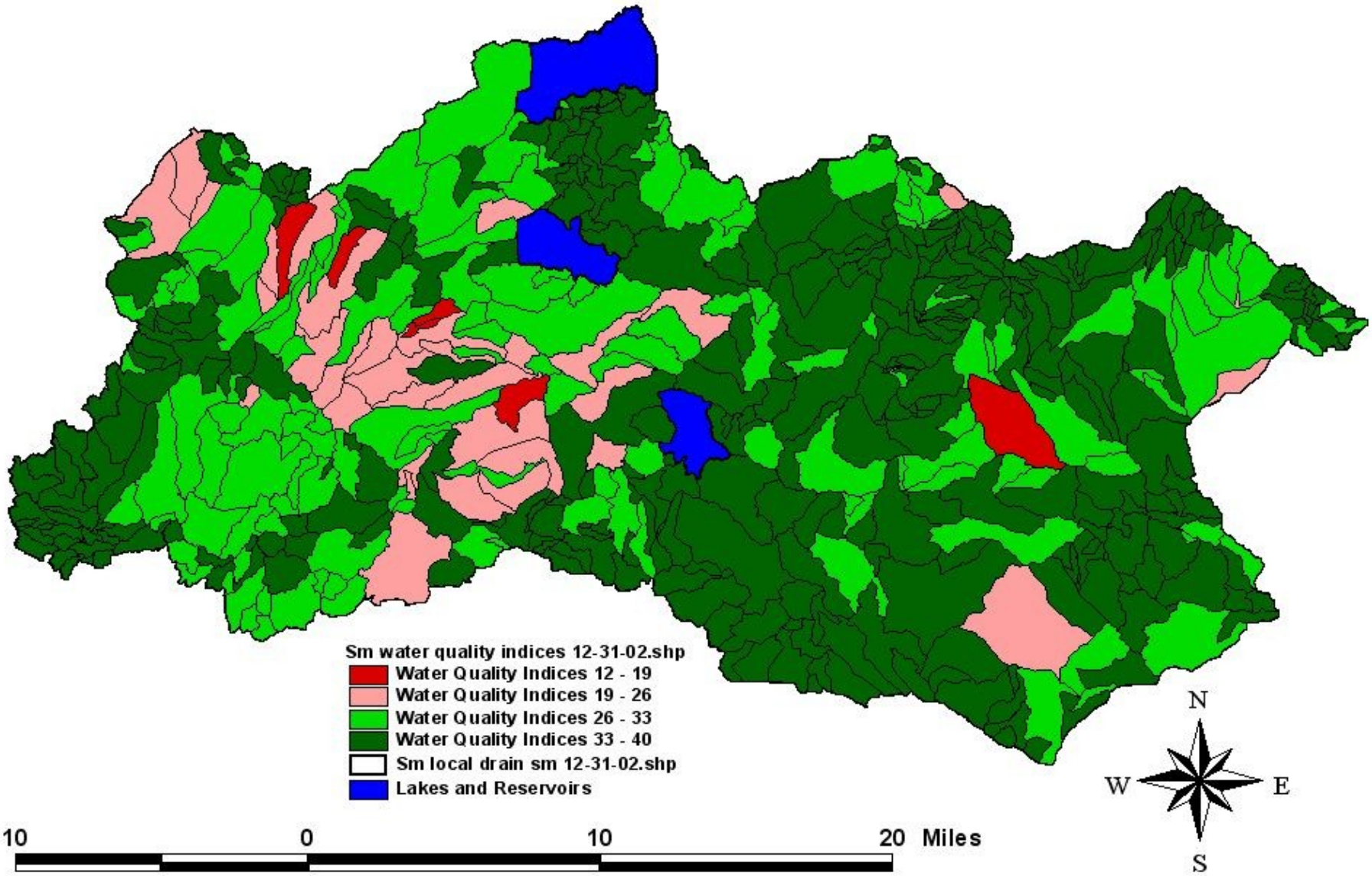
MAWI

- **The MAWI Procedure Involves:**
  - **Watershed characterization (Soils, LULC, geomorphology, vegetation, hydrography, etc.)**
  - **Delineation of assessment units**
  - **Assessment of baseline conditions using indicators of hydrologic, water quality and habitat integrity across multiple spatial scales**
  - **Assignment of integrity indices base on habitat, hydrology, and water quality models**
  - **Application of baseline assessment results in subsequent analysis, such as alternative analysis**

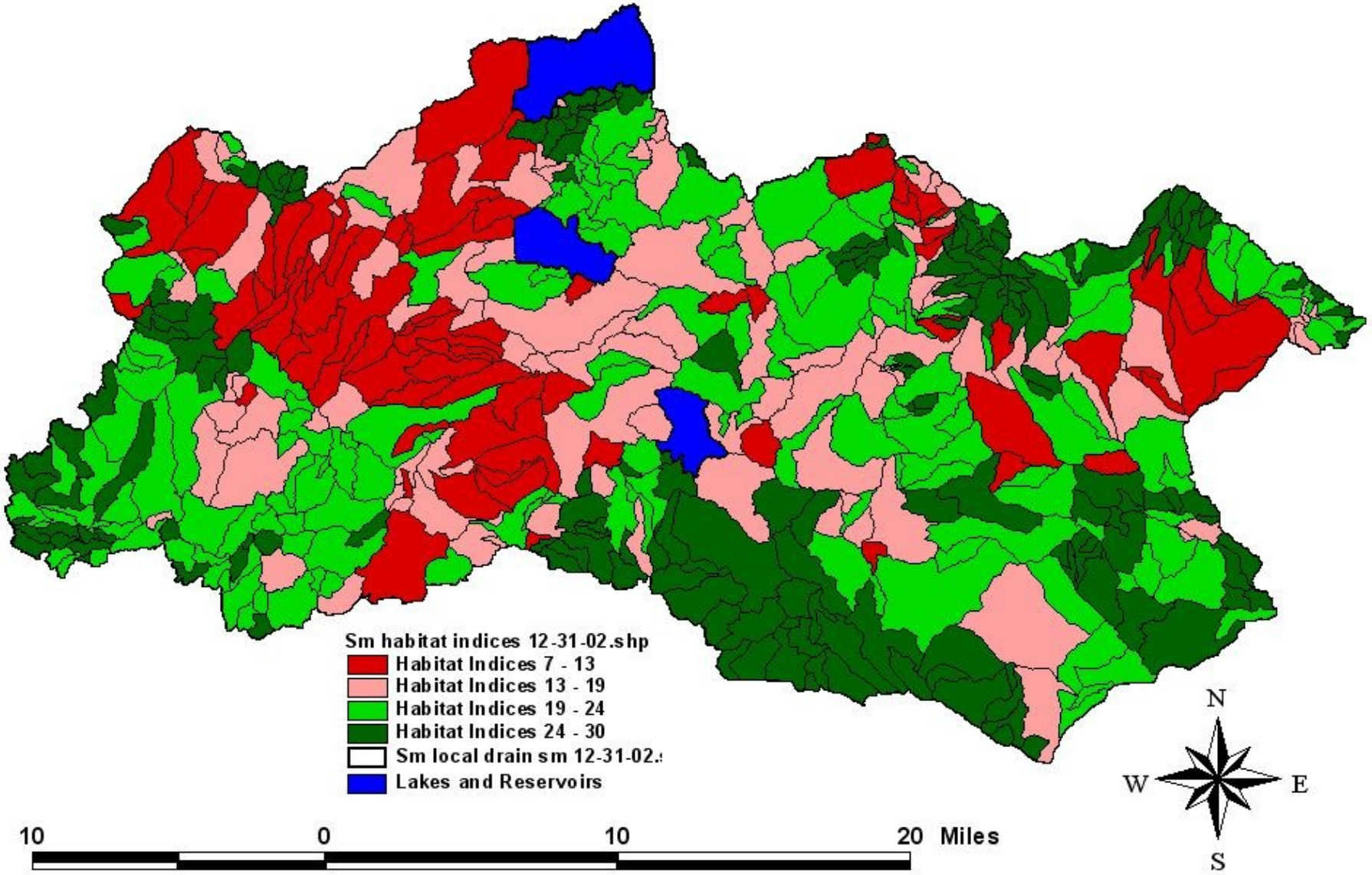
Santa Margarita Watershed - Hydrologic Integrity Indices



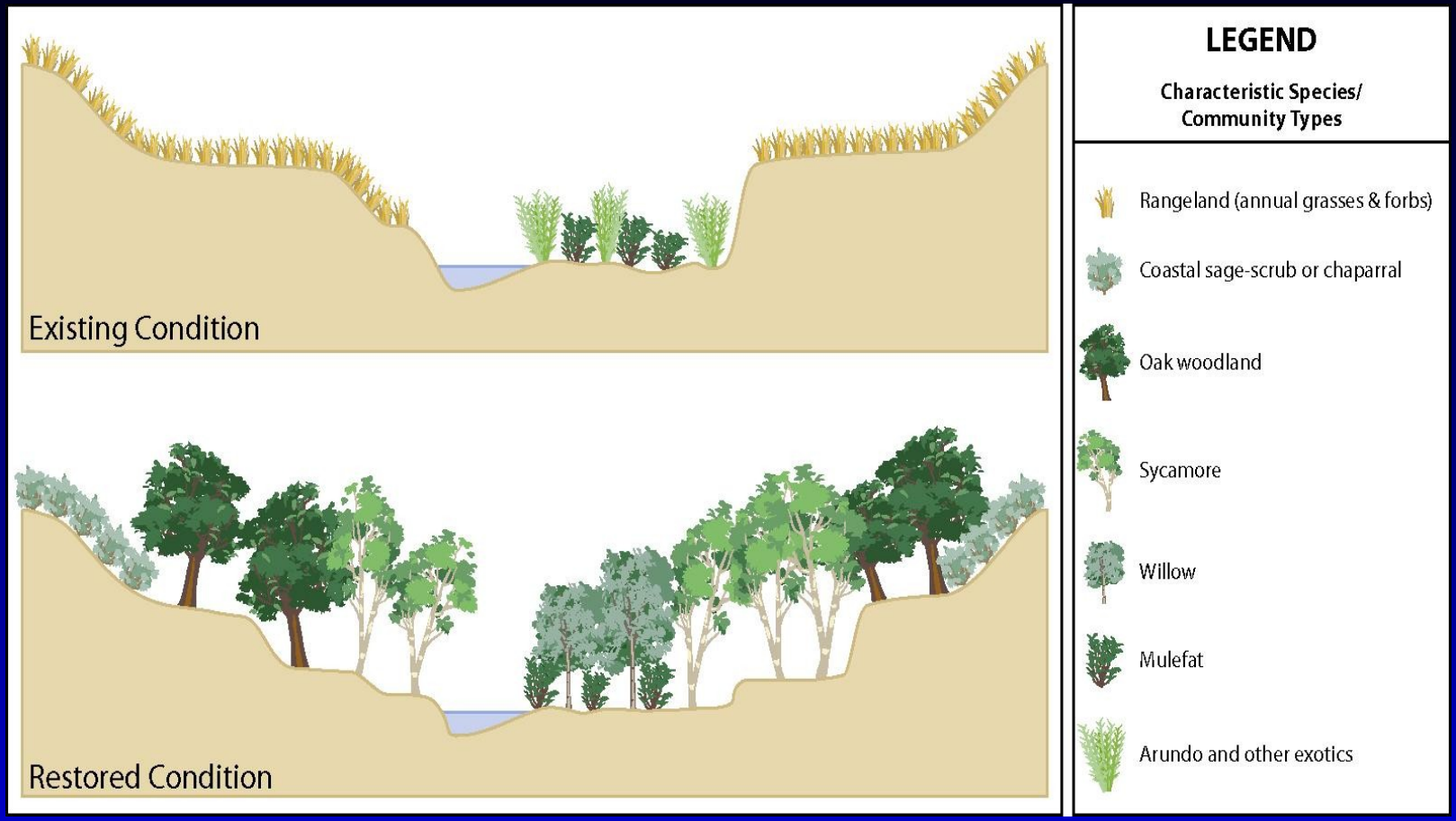
Santa Margarita Watershed - Water Quality Integrity Indices



Santa Margarita Watershed - Habitat Integrity Indices

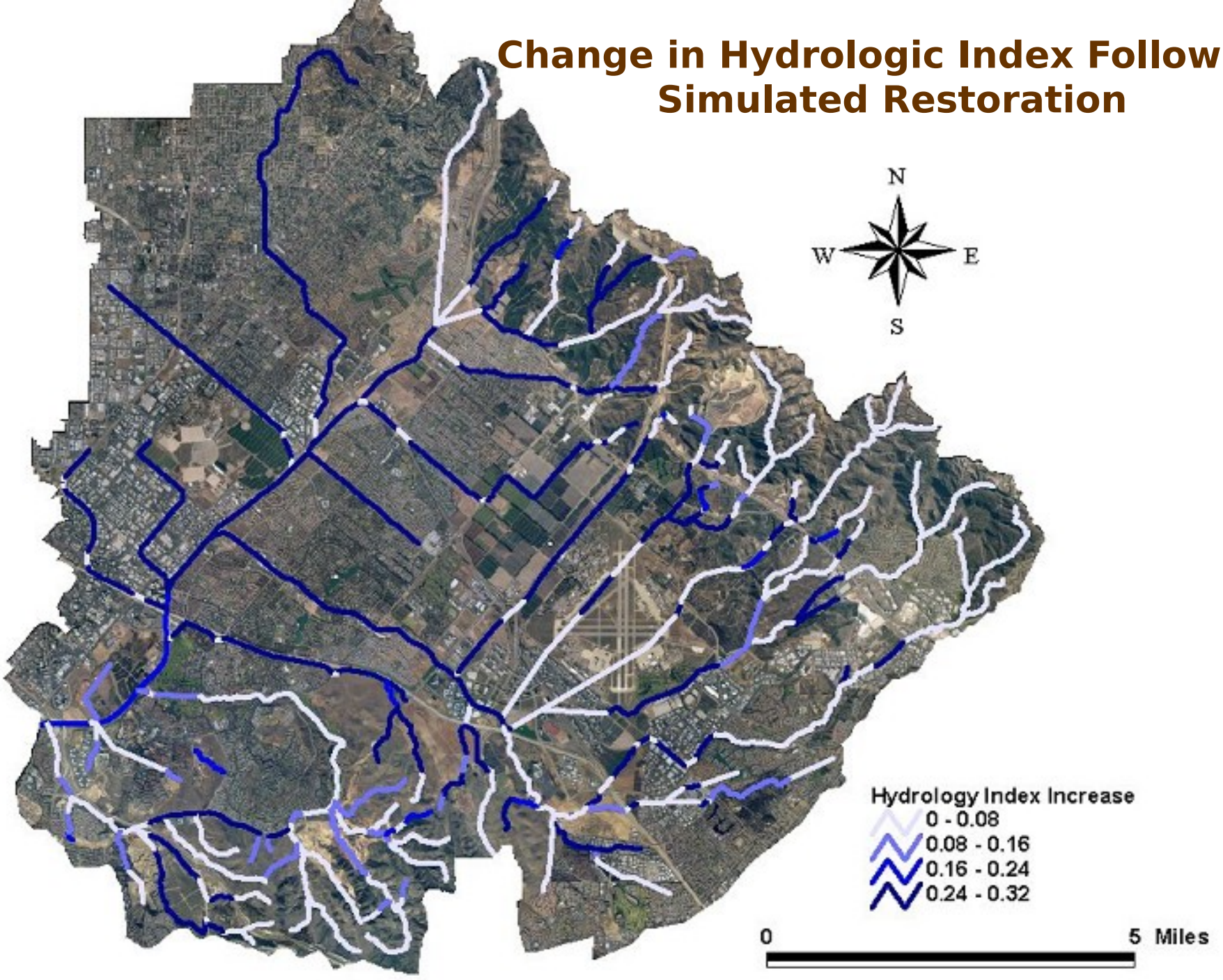


Incised Restoration Template

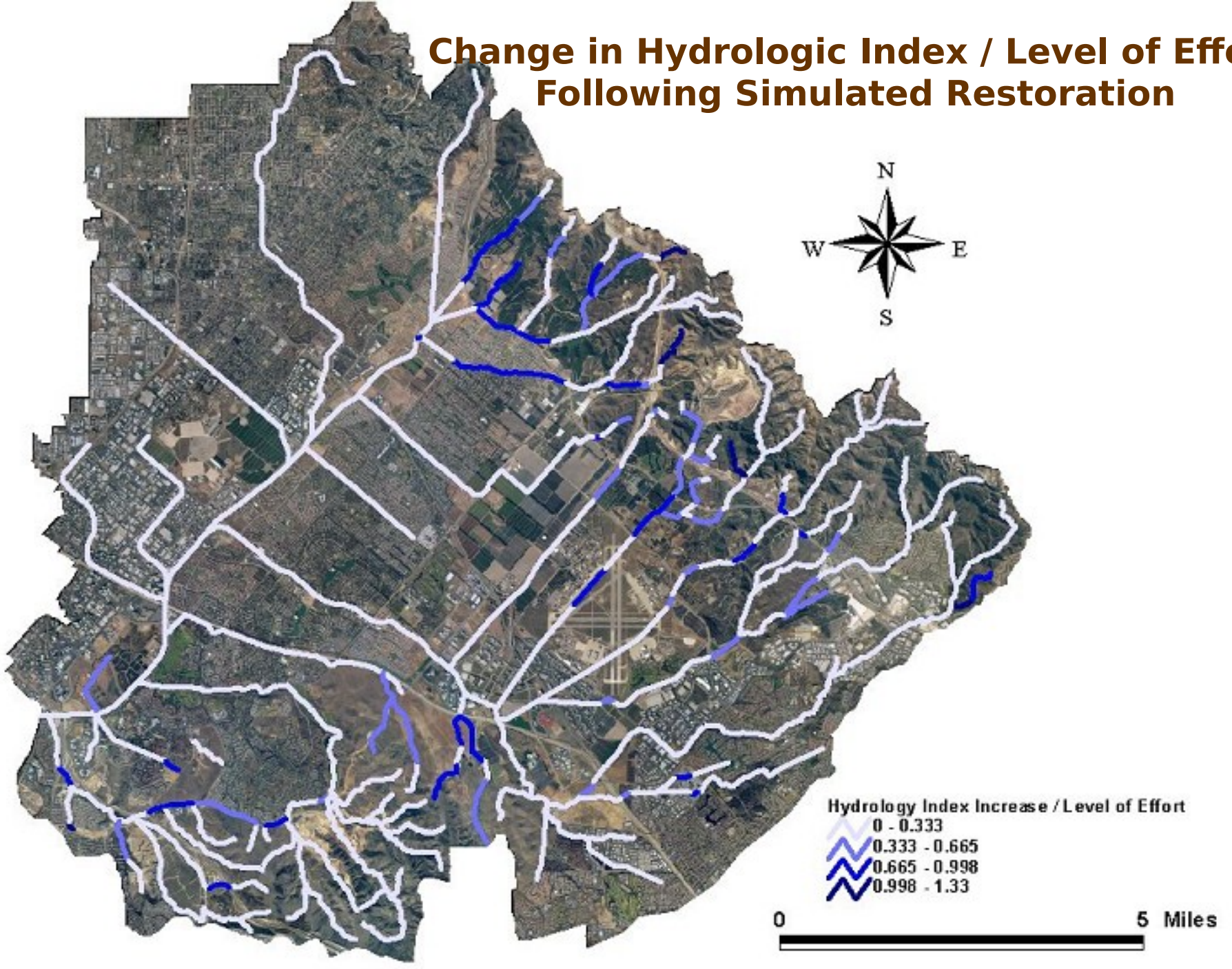


- **Bankfull Width: 1.5**
- **Bankfull Depth: 0.15 m**
- **Flood Prone Width: 2.4 m**
- **First Terrace Width: 1.8 m**
- **Height above Bankfull: 0.45 m**
- **Second Terrace Width: NA**
- **Height Above Bankfull: NA**

Change in Hydrologic Index Followin
Simulated Restoration



Change in Hydrologic Index / Level of Effo
Following Simulated Restoration



MAWI Future Directions

- Apply at upland, riparian, and in-stream scales
- Develop integrity indices for condition, vulnerability, restoration potential, and conservation potential at each scale
- Use a fuzzy expert system (NetWeaver®) to scale indices

Key Takeaway Points

- Watershed studies should:
  - Accommodate multi-objective/multi-purpose planning
  - Provide an analytical framework for assessment, evaluation, and comparison of alternative plans
  - Consider effects across all four P&G accounts
- MAWI offers considerable advantages for watershed planning:
  - Spatial Decision Support System
  - Multiple scales
  - Multiple disciplines
- MAWI exemplifies the tenets of watershed planning

ONONDAGA LAKE PARTNERSHIP

A clean lake reflects well
on all of us.

System-Wide Water
SWWRP
Resources Program

Onondaga Lake
Syracuse, NY

US Army Corps
of Engineers